Municipal District of Bonnyville No. 87

Lake Planning Framework

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Municipal District of Bonnyville #87
Lake Planning Framework

prepared by
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1.0 Introduction

1.1 Background Information

In 1973 the Province of Alberta established the Alberta Land Use Forum to consider various aspects of land use in Alberta. Technical background reports were prepared for various topic areas, including lakes. The major finding of the Forum's *Technical Report No. 12 – Use of Our Lakes and Lake Shorelands (1974)* was "that the real supply of lakes and lake shorelands has to be assessed and that priority decisions will have to be made as to the need for particular uses." (pp.I-1, I-2)

The Provincial Planning Branch and the Regional Planning Commissions responded to this finding by developing lake inventories and classification systems for their respective jurisdictions. The Planning Branch completed a *Regional Lake Classification (for) The Lakeland Region* in 1978. This was an initial classification of the region's lakes based on the Canada Land Inventory's assessment of natural resource potential. However, it was recognized that a planning framework for the Lakeland Region should take into consideration additional factors such as existing land use, access, lake size and location.

A lake planning framework for most of the Lakeland Region was initiated by the Provincial Planning Branch in 1980. The boundaries of the region studied are shown on *Map 1 – Regional Context*. The region was broken down into its five component rural municipalities. Individual lake planning frameworks have been prepared for each municipality.

It is intended that this report be used in combination with information and policies available from other government and private agencies. The Lake Planning Framework addresses one aspect of lakes: their apparent recreation potential based on resource capability and existing use. Various government departments have concerned themselves with other facets of lake use and management such as water management (Alberta Environment: Cold Lake-Beaver River Water Management Study), resource development on Crown lands (Alberta Energy and Natural Resources: Lakeland Integrated Resource Plan), provincial recreation facilities (Alberta Recreation and Parks), and tourism potential (Alberta Tourism and Small Business). Municipalities and others intending to use this report should also therefore refer to the aforementioned agencies for additional information for planning or similar purposes.

1.2 Purpose and Objectives

The primary purpose of this project is to provide data and information to municipal and provincial agencies which may be used in determining the appropriate use and management of the lakes within the region. This is in response to the steady increase of lake-oriented recreation development over the last twenty years, and the growing awareness that the lake resources of the region should be well managed.

Specific objectives of the project are as follows:

1) Development of a data base for individual lakes and their shorelands in the region
2) Designation[1] of lakes based on data collected
3) Investigation into methods of application

The first objective, that of data collection, has for the most part been achieved. The Planning Branch now has a substantial amount of information on the region's lakes. Based upon this information the second and third objectives have been addressed, as outlined in the remainder of this report.

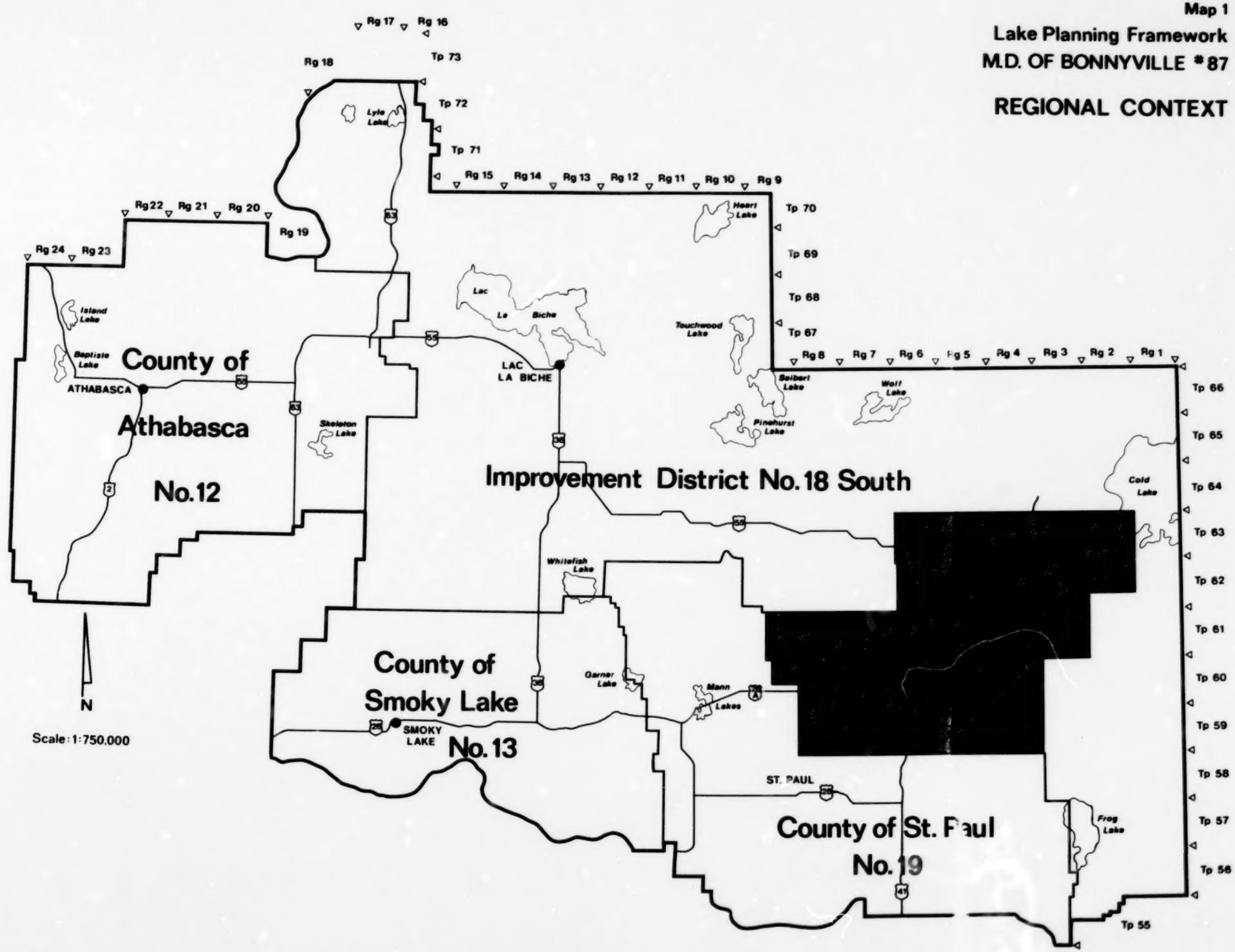
NOTE 1. The term "designation" in this report in no way implies a legal designation such as might be found in a land use bylaw or statutory plan. It simply indicates an option for the use and management of a lake, based on the information which has been compiled.

Map 1

Lake Planning Framework

M.D. OF BONNYVILLE #87

REGIONAL CONTEXT



2.0 Classification System

2.1 Overview

All lakes in the region over 32 ha in size have been assigned one of three possible designations: recreation, conservation or preservation. The designations indicate the type of use or uses for which the lakes appear to be most suited. They do not preclude other types of uses which have not been addressed, such as municipal or industrial. These other uses may, in many cases, co-exist.

The following sections define each of these designations and explain the rational used in assigning them. It should be noted that Council has reviewed the designations for lakes within its jurisdiction. Its familiarity with local lakes has aided in assessing the resource potential of the various lakes.

2.2 Recreation Lakes

Definition

Recreation lakes include two types of lakes: lakes which have potential for intensive recreational use; and lakes which are already used for intensive recreation. It is important to note the difference between these two categories; while all of the lakes in the first category appear to have potential for future intensive recreation use, some of the lakes in the second category have already been extensively developed and have little or no remaining potential.

The definition of a recreation lake reflects the two-fold nature of this group of lakes:

A recreation lake is a lake which is presently used, or has the potential to be used, for intensive recreational activities such as camping, swimming or country residences (e.g. cottages).

The designation of a lake as recreational does not mean that the entire lake shoreline can, or should be developed and used for intensive recreation. Many lakes are only suited to this type of use in specific areas, and may in fact have other areas which should be preserved in a natural state, or used at only a low scale, extensive level.

Methodology for Designation

The first step taken in designating recreation lakes was to examine the capability of the lakes' natural resources to support intensive recreation and sport fishing. This information is available in the Canada Land Inventory, which classifies units of land or water on a scale of one (highest capability) to seven (lowest capability). Lakes which were considered to have possible recreation potential were those with Class 1 to 4 recreation shoreline, or Class 1 to 2 sport fishing capability.

Some additional lakes were added to this category based on discussions with the various councils. It should also be noted that any lake which appeared to have a high capability for both wildlife and recreation was included in the recreation category at this stage.

Additional information was collected for all of the lakes identified as possible recreation lakes. A profile, summarizing the information gathered, was developed for each of these lakes. The lake profiles for the M.D. of Bonnyville appear in Appendix B.

In addition to summarizing available information for the lakes, each lake profile contains reference to any policies affecting the lake, an assessment of the overall recreation potential of each lake and a recommended designation. The major factors considered (when such information was available) in arriving at these recommendations were:

i) quantity and quality of recreational shoreline
ii) soil capability for recreational use, especially in areas of high capability recreational shoreline
iii) suitability of slope to recreation uses
iv) type, level, and location of existing recreation development
v) water quality

2.3 Conservation Lakes

Definition

A conservation lake is a lake which has limited recreational potential and little wildlife significance. Some limited, low intensity recreation activity such as hiking trails or backshore country residences may be possible in some instances.

Methodology for Designation

All lakes which do not have significant potential for intensive recreation, and in addition do not have valuable wildlife requiring protection, have been designated as conservation lakes. The purpose of this designation is to recognize those lakes which have little traditional recreation value but nonetheless contribute to the natural beauty and character of the region.

2.4 Preservation Lakes

Definition

A preservation lake is a lake which, because of its high value as an existing or potential wildlife production area, should be protected and remain undeveloped. The only type of recreational activities which should occur are sport fishing, hunting or wildlife observation.

Methodology for Designation

The designation of preservation lakes was based on an assessment of each lake's wildlife resources. The factors considered were:

1. Capability of shoreline to support ungulates (hooved animals)
2. Capability of lake to support waterfowl
3. Capability of lake to support sport fishing
4. Existence of ungulate or waterfowl production
5. Existence of nesting sites for endangered or sensitive species of birds and waterfowl.

The methodology used to rate each lake is explained in Appendix A.

3.0 Lake Designations

3.1 Lakeland Region

The classification system described in Section 2 has been applied to the entire Lakeland Region. Tables 1 to 5 summarize the distribution of the three types of lakes within the region. This information helps to develop an overall picture of the Lakeland Region's resources. Specific lake issues and concerns can then be viewed within the broader context of the M.D. of Bonnyville and the region.

Table 2, for the M.D. of Bonnyville, indicates that the M.D. contains 26 lakes in total. Twenty-three percent of these lakes have been designated recreation, 19% conservation and 58% preservation. Seven percent of all of the recreation lakes in the Lakeland Region are located in the M.D.; similarly, 3% of the conservation lakes and 11% of the preservation lakes are in the M.D.

3.2 M.D. of Bonnyville

A closer look at the lake resources in the M.D. of Bonnyville is provided by Table 6, which lists each of the lakes in the municipality and their designations. This information has also been mapped in order to illustrate the relative location of the various lakes, and areas where lakes of similar nature are concentrated (Map 2).

It should be remembered that the evaluation and resultant designation of the lakes is based on a general level of information. It is assumed that site specific investigations in such areas as soil analysis, groundwater supply, lake water quality analysis and user surveys need only be carried out for those lakes which the M.D. of Bonnyville wishes to examine in more detail.

The lake planning framework is not a substitute for individual lake studies or plans. It provides, as its name suggests, a framework for the M.D. of Bonnyville and other people or agencies to use in considering appropriate uses for various lakes. In most instances more detailed site analysis should be carried out prior to decisions being made on specific development proposals or lake management strategies.

TABLES 1 TO 5
NUMBER AND PERCENTAGE OF LAKES BY DESIGNATION FOR MUNICIPALITY AND REGION

TABLE 1 – IMPROVEMENT DISTRICT #18 SOUTH

LAKE DESIGNATIONS	NUMBER OF LAKES	% OF I.D. LAKES	% OF REGION'S LAKES WITH SAME DESIGNATION
RECREATION	37	17	41
CONSERVATION	104	48	63
PRESERVATION	75	35	54
TOTAL	216		

TABLE 2 – MUNICIPAL DISTRICT OF BONNYVILLE #87

LAKE DESIGNATIONS	NUMBER OF LAKES	% OF M.D. LAKES	% OF REGION'S LAKES WITH SAME DESIGNATION
RECREATION	6	23	7
CONSERVATION	5	19	3
PRESERVATION	15	58	11
TOTAL	26		

TABLE 3 – COUNTY OF ATHABASCA #12

LAKE DESIGNATIONS	NUMBER OF LAKES	% OF COUNTY LAKES	% OF REGION'S LAKES WITH SAME DESIGNATION
RECREATION	15	33	17
CONSERVATION	19	42	12
PRESERVATION	11	24	8
TOTAL	45		

TABLE 4 – COUNTY OF SMOKY LAKE #13

LAKE DESIGNATIONS	NUMBER OF LAKES	% OF COUNTY LAKES	% OF REGION'S LAKES WITH SAME DESIGNATION
RECREATION	8	20	9
CONSERVATION	18	44	11
PRESERVATION	15	37	11
TOTAL	41		

TABLE 6

Lake Designations
M.D. OF BONNYVILLE #87

RECREATION

Lake	Legal Description	Lake	Legal Description
Beartrap Lake	60-4-4	Minnie Lake	61-8-4
Chickenhill Lake	59-8-4	Moose Lake	60/61-7-1
Ernestina Lake	61-3/4-4	Muriel Lake	59/60-5-4

CONSERVATION

Landry Lake	60-5-4	Unnamed	63-4-4 (sec 22)
Unnamed	60-6-4 (sec 28)	Unnamed	63-5-4 (sec 35)
Unnamed	61-4-4 (sec 15)		

PRESERVATION

Bangs Lake	60-7/8-4	Sinking Lake	59/60-6-4
Charlotte Lake	61-5-4	Thin Lake North	60-8-4 (sec 25)
Chatwin Lake	61-6-4	Thin Lake South	60-7-4 (sec 19)
Edward Lake	63-4-4	Unnamed	59-6-4 (sec 21)
Forsyth Lake	62-6-4 (sec 4,5)	Unnamed	61-3-4 (sec 19)
Harold Lake	63-4-4	Unnamed	61-5-4 (sec 5)
Jessie Lake	61-5-4	Unnamed	63-6-4 (sec 26)
Maloney Lake	63-3-4		

TABLE 5 – COUNTY OF ST. PAUL #19

LAKE DESIGNATIONS	NUMBER OF LAKES	% OF COUNTY LAKES	% OF REGION'S LAKES WITH SAME DESIGNATION
RECREATION	24	36	27
CONSERVATION	20	31	12
PRESERVATION	22	34	16
TOTAL	66		

4.0 Application

Every municipality is different in its view of, and approach to, the management of its lakes. That is why this lake planning framework does not prescribe the manner in which it should be used. Instead, a range of options are available which could be used individually or in combination. The best course of action will be that which is most appropriate for the M.D. of Bonnyville, in light of its lake resources, the demand for these resources, and the degree to which the Council wishes to be involved in the management of the M.D.'s resources.

The M.D. of Bonnyville may wish to:

1. Utilize the information provided by the lake planning framework when responding to subdivision and development proposals.
2. Adopt the lake planning framework as a guideline for the use of the M.D.'s lakes. This can be done through a general municipal plan or land use strategy, land use bylaw, or by resolution by council.
3. Establish standards, guidelines and criteria for lake oriented recreation development.
4. Initiate lake planning programs for lakes which are currently experiencing development pressure or conflicts, or lakes which may or should experience pressures in the future.

It is important to remember that there are several government and private agencies that share an interest in the use of this province's lakes and their shorelands. They too have information and policies which should be utilized when considering appropriate lake uses. In particular, Alberta Recreation and Parks, Alberta Tourism and Small Business, Alberta Environment (Cold Lake-Beaver River Water Management Study), and Alberta Energy and Natural Resources (Lakeland Integrated Resource Plan) all address the use and/or management of various lakes in the region.

Regardless of how M.D. of Bonnyville choose to use the lake planning framework, it is hoped that this report has provided a broad picture of the type of lake resources found in the Lakeland Region and their potential for future use and enjoyment.

Appendix A
Identification of Preservation Lakes

A list of five criteria, each an indicator of valuable wildlife or waterfowl resources, was developed. The criteria were not all considered to be of equal importance, therefore a weighting system was established. Each lake was rated using the five criteria, and their respective weighted scores. Any lake which received a total score of two or more using this system was designated as a preservation lake.

1. Lake has Class 1, 1W or 2W ungulate capability shoreline under the Canada Land Inventory (weighted score = 1)
2. Lake has Class 1, 1S, 2, 2S, 3S or 3M waterfowl capability under the Canada Land Inventory (weighted score = 2)
3. Lake has Class 1 or 2 sport fishing capability under the Canada Land Inventory System (weighted score = 2)
4. Lake has been identified by Alberta Fish and Wildlife on their "Key Wildlife Areas" map as having either ungulate or waterfowl production (weighted score = 2)
5. Lake has been identified by Alberta Fish and Wildlife on their "Key Wildlife Areas" map as a nesting site for: Peregrine Falcons, Osprey, Great Blue Heron, Cormorants or Pelicans (weighted score = 2)

Explanation of symbols and terminology:

CLASS – Canada Land Inventory rates resources on a scale from 1 to 7, with 1 being the best or highest capability

W – wintering range for ungulates

S – important migration stop for waterfowl

M – important migration or wintering stop for waterfowl

Appendix B
Recreation Lake Profiles

All lakes in the M.D. of Bonnyville which appeared initially to have recreation potential have been studied in more detail.[1] The following profiles summarize the type of information gathered and assessed and the recommended lake designation, for each of these lakes.

Some explanatory notes:

1. The information was collected in August 1980 and updated in October 1983.
2. The information provided in the profiles is very general in nature and is not substitute for site specific analysis necessary for subdivision and development.

A. Resource Base

3. All measurements are in metric.[2]
4. Canada Land Inventory (C.L.I.) ratings range from 1 (highest capability to 7)(lowest capability). Ratings which are followed by an asterisk (*) are resources considered to be regionally or provincially significant.
5. C.L.I. ratings for recreation are followed by an approximate measure of the length and percentage of the lake's shoreline in each class.

B. Development Support Information

6. Soil capability for sewage assimilation and intensive recreation is rated as either poor, fair or good.
7. Slopes greater than 15% (ie rising 15 meters or more per 100 meters) is considered less desirable for building due to the potential for erosion and slippage.

C. Existing Development

8. Existing road access or development is noted, as well as their approximate location on the lakeshore.
9. The Planning Act does not distinguish between cottages and permanent rural residences. The term "country residential" is used in the profiles to represent either or both of these types of residences.

D. Comments/Evaluation

10. Wetland habitat refers to swamps and marshes which support waterfowl or wildlife. They can be shallow or more permanent in nature and are rated as poor, fair, good or excellent.

NOTE 1. Profiles were not prepared for Chickenhill, Moose and Muriel lakes because detailed lake management studies and area structure plans have already been prepared for these recreation lakes.

NOTE 2. Approximate metric conversions:
1 hectare (ha) = 2.5 acres
1 kilometre (km) = 0.6 miles
1 metre (m) = 3.3 feet

LAKE PROFILE

NAME: BANGS LAKE MUNICIPALITY: M.D. OF BONNYVILLE
LEGAL DESCRIPTION: Section Township 60 Range 7 & 8 West 4

A. RESOURCE BASE

Lake Area — 172 ha Shorelength — 10 km Depth — ?
C.L.I.:Waterfowl — 5 Ungulates — 1* Sportfishing — ?
Recreation — Class 4 - 6.1 km (61.3%)
Class 5 - 3.9 km (38.7%)

B. DEVELOPMENT SUPPORT INFORMATION

Soil Capability for:

- Sewage Assimilation — unsuitable surrounding lake shore; fair in backshore
- Intensive Recreation — mainly good; some poor (northwest)

Slope — generally 0-5%; some 5-15% (north backshore)

C. EXISTING DEVELOPMENT

Access-indirect access from the north, 0.8 km to a provincial highway
Development-none; 40% crown land

D. COMMENTS/EVALUATION

- "fair" shallow and permanent wetland habitat
- small size
- marsh – edged shoreline
- clear, fresh water lake
- extensive narrow stretches of sandy beach (east)
- moderate intensity sport fishing
- possible preservation lake (sportfishing; Class 1 Ungulates; "fair" wetland habitat)

E. RECOMMENDATION

☐ RECREATION ☐ CONSERVATION ☒ PRESERVATION

LAKE PROFILE

NAME: BEARTRAP LAKE MUNICIPALITY: M.D. OF BONNYVILLE
LEGAL DESCRIPTION: Section Township 60 Range 4 West 4

A. RESOURCE BASE

Lake Area — 143 ha Shorelength — 4.5 km Depth — 8.2m maximum
C.L.I.:Waterfowl — 4 Ungulates — 3,4 Sportfishing — ?
Recreation — Class 2 - 1.0 km (21.4%); Class 3 - 0.3 km (7.1%)
Class 4 - 2.6 km (57.1%); Class 5 - 0.6 km (14.3%)

B. DEVELOPMENT SUPPORT INFORMATION

Soil Capability for:

- Sewage Assimilation — fair
- Intensive Recreation — mixture of good (north and south) and fair (east and west)

Slope — mixture of 5 - 9% (north and south) and 9 - 15% (east & west)

C. EXISTING DEVELOPMENT

Access-direct at northwest to a municipal road, 3.2 km to a secondary road
Development-provincial campsite (southeast); three dispersed cottages; 40% crown land

D. COMMENTS/EVALUATION

- low to moderate intensity sport fishing
- "good" shallow and permanent wetland habitat
- small size
- Class 2B (southeast) has a sandy beach and fair soils - could support some further public recreation use
- lake has potential for public recreation and some low density country residential development, but because of its small size, development would have to be carefully controlled.

E. RECOMMENDATION

[X] RECREATION [ ] CONSERVATION [ ] PRESERVATION

LAKE PROFILE

NAME: ERNESTINA LAKE MUNICIPALITY: M.D. OF BONNYVILLE
LEGAL DESCRIPTION: Section Township 61 Range 3,4 West 4

A. RESOURCE BASE

Lake Area — 340 ha Shorelength — 7.6 km Depth — 7.3 m maximum
C.L.I.:Waterfowl — 4 Ungulates — 3, 4 Sportfishing — 1*
Recreation — Class 3 - 0.8 km (10.6%); Class 4 - 3.4 km (44.7%)
Class 5 - 3.4 km (44.7%)

B. DEVELOPMENT SUPPORT INFORMATION

Soil Capability for:

- Sewage Assimilation — fair
- Intensive Recreation — mainly fair; some good (north)

Slope — generally 9 - 15%; some 5 - 9% (south)

C. EXISTING DEVELOPMENT

Access-direct at northwest to a municipal road; 1.6 km to a secondary road
Development-provincial campsite; M.D. park; 90% crown land

D. COMMENTS/EVALUATION

- moderate intensity sport fishing
- "fair" shallow and "good" permanent wetland habitat
- lake has potential for moderately intensive public use on its higher capability recreational shoreline (Class 3 beaches (east))
- some moderate to low density country residential development could be considered in suitable areas - Class 3 backshore
- any further development should be preceded by a lake study in order to assess level of use generated by existing campsites.

E. RECOMMENDATION

[X] RECREATION [ ] CONSERVATION [ ] PRESERVATION

LAKE PROFILE

NAME: MINNIE LAKE MUNICIPALITY: M.D. OF BONNYVILLE
LEGAL DESCRIPTION: Section Township 61 Range 8 West 4

A. RESOURCE BASE

Lake Area — 83 ha Shorelength — 5.5 km Depth — 2.6 m maximum
C.L.I.:Waterfowl — 5 Ungulates — 4 Sportfishing — ?
Recreation — Class 4 - 2.4 km (44.1%)
Class 5 - 3.1 km (55.9%)

B. DEVELOPMENT SUPPORT INFORMATION

Soil Capability for:

- Sewage Assimilation — fair
- Intensive Recreation — fair (shoreline); good (east and west backshore)

Slope — 9 - 15% (shoreline); 0 - 5% (east and west backshore)

C. EXISTING DEVELOPMENT

Access-direct at south to a municipal road, 1.2 km to a secondary road; direct access at north on municipal road

Development-provincial campsite; 15 lot subdivision; dispersed cottages and farms; water source for Town of Glendon

D. COMMENTS/EVALUATION

- moderate intensity sport fishing
- "good" shallow and permanent wetland habitat
- steep shoreline
- small lake
- very limited remaining recreation potential

E. RECOMMENDATION

[X] RECREATION [ ] CONSERVATION [ ] PRESERVATION

LAKE PROFILE

NAME: THIN LAKE SOUTH MUNICIPALITY: M.D. OF BONNYVILLE
LEGAL DESCRIPTION: Section 19 Township 60 Range 7 West 4

A. RESOURCE BASE

Lake Area — 62 ha Shorelength — 4.5 km Depth — ?
C.L.I.:Waterfowl — 2* Ungulates — 1* Sportfishing — 1*
Recreation — Class 4 - 1.4 km (32.1%)
Class 5 - 3.1 km (67.9%)

B. DEVELOPMENT SUPPORT INFORMATION

Soil Capability for:

- Sewage Assimilation — mainly fair; unsuitable (northeast and southwest)
- Intensive Recreation — mixture of good (south), fair (north), and poor (northeast and southwest)

Slope — generally 0 - 5%; some 5 - 9% (north)

C. EXISTING DEVELOPMENT

Access-indirect access, from the east 0.8 km to a municipal road, 3.2 km to a provincial hwy.
Development-none; 60% crown land

D. COMMENTS/EVALUATION

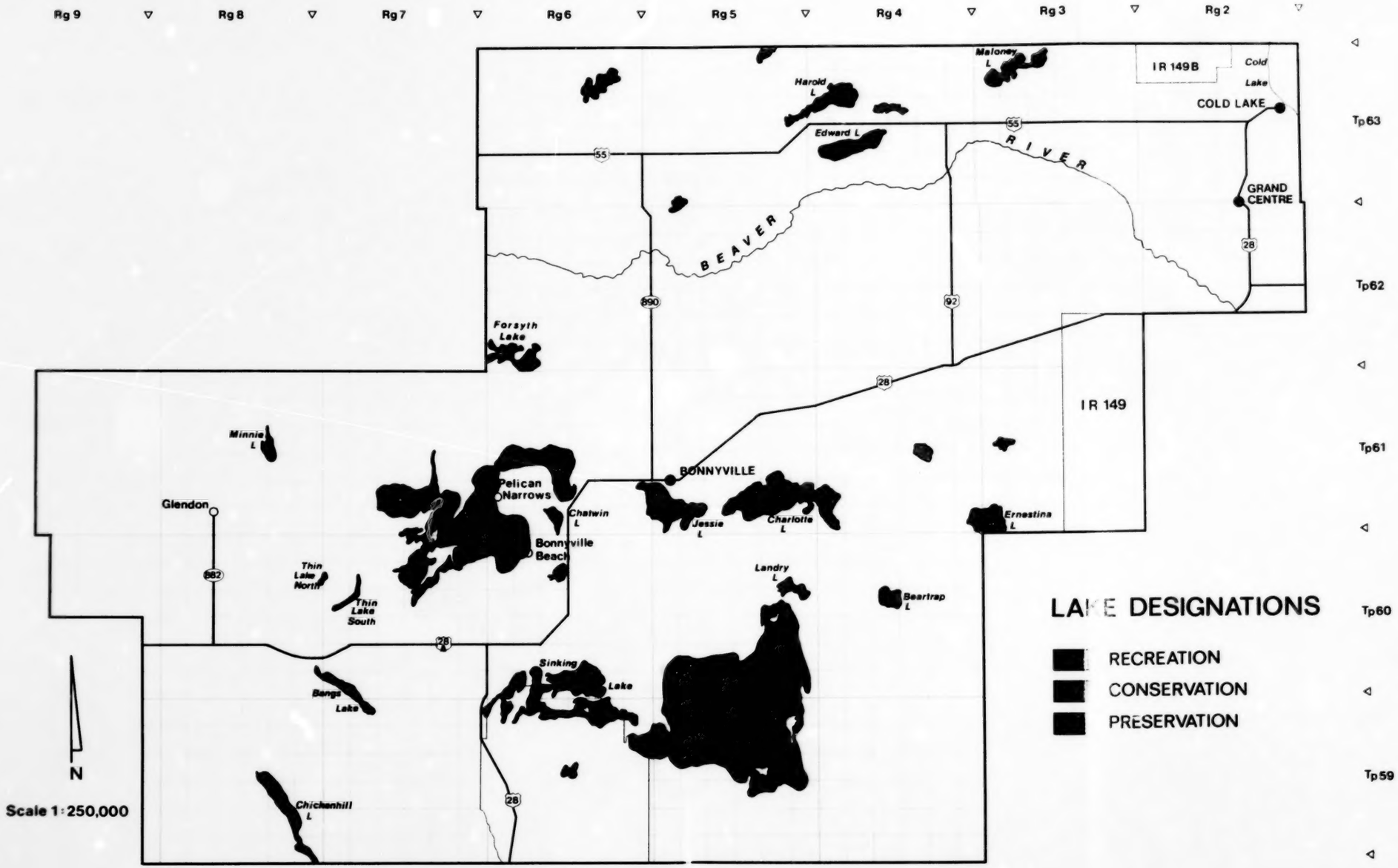
- small size, narrow width
- "good" shallow and permanent wetland habitat
- marshy area (north and west)
- shallow muddy lake
- good fishing
- little recreational potential
- possible preservation lake (Class 1 - Ungulates, Class 2 - Waterfowl, Class 1 - sportfishing and good wetland habitat)

E. RECOMMENDATION

☐ RECREATION ☐ CONSERVATION ☒ PRESERVATION

Map 2

Lake Planning Framework
M.D. OF BONNYVILLE # 87



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